

Limiting informal economy in the context of business environment regulations. An analysis of “young” European Union members

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Abstract: Most of the studies undertaken in the direction of the underground economy identify fiscal pressure and corruption as the main determining forces of this phenomenon. The present study tries to address other factors as potential drivers of the unobserved economy through variables that summarize the conditions that characterize the business environment. For this purpose we will consider the situation of eight member states of the European Union, states that joined EU after 2000. Using panel data we will investigate the link between regulations and the informal economy over the period 2000-2015. The paper is structured as follows: firstly we will provide a short introduction regarding the issue of the underground economy, followed by a review of the scientific literature on this topic. In the third section, the research methodology will be detailed along with the variables and data used, specifying their collection sources. The last two sections are dedicated to the presentation of the main results and to expose some conclusions and proposals for the limitation of the informal economy in the context of regulations specific to the business environment.

Key words: shadow economy, panel data, business environment, excessive regulation

JEL: C33, C52, E26, H26

1. Introduction

The underground economy has become a new normal, a natural element that characterizes the economic environment in all countries of the world in a period of continuous change (Toma and Marinescu, 2015). The phenomenon did not omit any country but manifests itself with a greater or lesser intensity depending on a number of factors specific to each nation: level of economic development, corruption, regulatory intensity, or political stability determining the dynamics of the phenomenon over a certain period of time. Other factors may also be taken into account such as managerial performance, leadership, entrepreneurial spirit, corporate citizenship, or social responsibility (Toma, 2008; Marinescu, Toma and Constantin, 2016; Marinescu, et al, 2017; Toma and Grădinaru, 2020).

The literature started focusing on this topic decades ago, researchers seeking to identify primarily the root causes of this phenomenon, but also to propose some efficient policies that can control the underground economy, as it threatens the well-being of citizens, as well as the proper functioning of goods and services markets. Within their studies, researchers and scholars have referred to the phenomenon under various names such as the black economy, the informal economy, the unregulated economy, the hidden economy or the unobserved economy. All these terms aim to summarize the fact that the activities undertaken in this area seek to avoid registration to the official statistics.

Among the most recent updates on the level of the informal economy worldwide is the research undertaken by Medina and Schneider (2018). They estimate that between 1991 and 2015 the unobserved economy at global level represented approximately 31.9% in relation to the calculated official GDP. They include 158 states and highlight significant differences regarding the magnitude of the phenomenon from one category of state to another. For example, OECD member countries have much less informal sectors compared to Latin American or sub-Saharan African countries.

Numerous debates have arisen with respect to the effects of the unobserved economy, beyond so many negative consequences, a positive one being highlighted. The most notable advantage, although it manifests itself in the short term

is the fact that the underground economy can act as a "life jacket" for people in need, for example people who have lost their jobs in the official economy and need to earn an income at any cost, even with the acceptance of involving into the undeclared work. Most of the studies undertaken in the direction of the underground economy identify fiscal pressure and corruption as the main determining forces of this phenomenon. The present study tries to address other factors as potential drivers of the unobserved economy through variables that summarize the conditions that characterize the business environment.

2. Literature review

The underground economy represents a widespread problem, being an important issue that often causes functional deficiencies in the markets for goods and services. However, the magnitude of this phenomenon differs from one state to another, these differences being generated by

causes such as: the legislative framework of the country, the quality of public services, but also the level of corruption, the latter being part of the informal economy. The phenomenon of underground economy affects the social and economic situation of a state, and can also be a threat to its stability.

The formulation of the first definitions of the informal economy was based on a comprehensive spectrum of activities, from acts of a criminal nature or unpaid work, to volunteering or barter. Recently, a subcategory of the underground economy, also known as the paid informal economy, was highlighted. This can be defined as “an exchange of money that is not registered or evaded from taxes, social security contributions and / or labor rights imposed by the state, but which is legal in all other respects.” (Williams, 2011)

From the perspective of Schneider and Williams (2013), a narrower definition of the informal economy has been adopted, according to which it includes the legal production of goods and services, but which are deliberately hidden by public authorities, for any of the following reasons: the payment of income tax, value added tax or other taxes; avoiding the payment of social security contributions; non-compliance with legal standards imposed on the labor market such as: safety at work, the minimum wage in the economy or the maximum number of hours worked; avoiding compliance with various administrative rules.

The development of the underground economy is driven by a number of causes and determinants, which can be grouped into three categories, as follows: long-term factors, which relate to issues such as tradition, identity or political culture; particular institutions and regulations, here being found the level of economic development, regional specificity, fiscal pressure, intensity of regulations, quality of institutions; the last category includes the factors located at micro-economic level and the perception of the economic agents on them.

Friedman, et. al. (2000) find that bureaucracy and institutional over-regulation push economic agents to engage in activities specific to the informal economy. It is not necessarily their desire to evade compliance with tax obligations, but the intention to avoid excessive bureaucracy can lead to the expansion of the informal sector.

Enste and Hardege (2006) in turn confirm the advantages of a less stringent regulatory system, for example on the labor market. Their study, at the level of OECD countries where the legislation is less dense, individuals are less afraid of losing their jobs compared to people in environments where regulations are stricter.

Estrin and Mickiewicz (2010) investigate the link between the scale of the informal economy and the likelihood of individuals engaging in entrepreneurial activities. Their findings indicate a negative correlation between an individual's chances of starting a business and the size of the informal sector in that country. In Romania, for example, it was observed that entrepreneurial activity is influenced by a number of psychological factors such as self-confidence of businessmen, the perception of having the necessary experience to manage a business, but also aspects related to education and income of individuals. (Bălă, et al., 2020)

Enste (2010) analyzes the intensity of regulations in the business environment as a potential cause of the informal economy. His empirical research on 25 OECD Member States points to exaggerated regulations, beyond the well-known causes of tax pressure and labor regulations, as

a significant cause of the expansion of the underground economy. Facilitating regulation means greater freedom for economic operators, who should no longer feel motivated to migrate to the unregulated sector.

Wiseman (2014) studies the interdependencies between the informal economy, the level of corruption and the entrepreneurial environment. On the one hand, the study analyzes the reaction of entrepreneurs to changes in the institutional environment, on the other hand trying to identify the informal economy as a potential refuge for entrepreneurs from countries with poor institutional quality and high levels of corruption. Using an OLS-type estimate, he observes a statistically significant, opposite relationship between productive entrepreneurship and the informal economy. In other words, the paper indicates the migration of productive entrepreneurship to the hidden economy and the support of the informal economy for unproductive activity in the official economy.

Early and Peksen (2019) are providing an analysis focused on 145 states for the period 1971-2005. They study the relationship between the intensity of economic sanctions and the involvement of companies in activities specific to the informal economy. Their evidences indicate a positive, significant relationship between the two variables. More precisely, the more pronounced the sanctions, the more developed is the sector of the unobserved economy. A similar effect is manifested by political shocks, causing economic agents to operate within the unregulated economy.

Mughal, et. al. (2020) reiterate the impact of exaggerated regulations that are reflected in the expansion of the unobserved economy. Their research focuses on the situation of Pakistan over the period of 1973-2015. They consider that the introduction of new regulations and laws does not come to support the citizens, but in the development of bureaucracy, a typical phenomenon characterizing most of developing countries.

Nguyen and Duong (2021) undertake a study on the BRICS states over the period 1991-2017. Their research is oriented on two directions. On the one hand, they analyze economic growth and its determinants at the level of BRICS states, but on the other hand, they are focusing on the informal economy phenomenon. For the considered sample it is observed that in certain situations the informal sector can contribute to the growth of the official economy, while corruption determines the sinking of the official economy. Therefore, in order to encourage economic growth, the state must learn to control the phenomenon of corruption.

3. Research methodology

Panel data are recognized in the scientific literature as longitudinal data or cross-sectional time series and represent sets of data that study the behavior of different entities or individuals over time. The advantages of using panel data are highlighted in works such as that of Baltagi (2001). His study indicates aspects such as increased variability, lower collinearity between variables, improved efficiency, but also the fact that panel data is a much more generous source of information.

By using panel data it is possible to study the fixed or random effects specific to either the entities or the time periods considered. The functional forms of the fixed and random effects

models are indicated below:

For the fixed effects model:

$$y_{it} = (\alpha + u_i) + X'_{it}\beta + v_{it} \tag{1}$$

For the random effects model:

$$y_{it} = \alpha + X'_{it}\beta + w_{i,t} \tag{2}$$

To determine what type of effects will prove to be significant and relevant to the panel data considered in this study we will use the test proposed by Hausman (1978). The choice between a fixed-effects model and a random-effects model will require testing the assumptions given below:

H₀: For the considered panel structure, the random effects model is recommended.

H₁: For the considered panel structure, the fixed effects model is recommended.

Based on this, it is checked if there is a correlation between regressors and unique u_i errors. The null hypothesis of the test assumes the absence of correlation between the previously mentioned elements. Its rejection implies the consideration of a model with fixed effects.

As can be seen in the results section, for the panel data structure considered within this paper it will be necessary to use a model with random effects.

In the case of the random effects model, the w_(i,t) term from equation 2 is represented as w_(i,t) = u_i + v_{it} where

$u_i \sim IID(0, \sigma_u^2)$ denotes a random effect specific to a period of time or to a certain entity not included in the regression model $v_{it} \sim IID(0, \sigma_v^2)$

The estimation of the models with random effects is done either by the GLS method (the generalized least squares method), by the FGLS (the feasible generalized least squares method) or EGLS (estimated generalized least squares). The GLS method is specific to situations where the covariance structure of the composite error terms is known, while EGLS / FGLS is applied when the structure of the covariance of composite errors is not known. Most of the time this structure is not known, therefore EGLS and FGLS are much more common.

This paper aims to analyze the impact of business conditions in eight European countries on their underground economies. We will consider the situation of the following countries: Bulgaria, Croatia, Estonia, Hungary, Poland, Romania, the Slovak Republic and Slovenia. The time horizon on which we will focus is situated between 2000 and 2015. Data on the state of business regulations were collected from the World Bank website, while the most recent data on the level of informal economies are represented by the calculations made by Medina and Schneider (2018).

A brief overview of the indicators used in this analysis can be found in Table 1.

Table 1: Variables and sources of collection

Variable	Acronym	Brief description	Source
Shadow Economy	SE	Indicator representing the share of the underground economy in the official economy (% GDP)	Medina și Schneider (2018)
Cost of starting a business	Cost	The cost required to perform all the procedures necessary to launch a business, calculated as a percentage of per capita income.	World Bank
Number of procedures required to start a business	Procedures	Indicator that sums up the number of procedures required to launch a business. A procedure is interpreted as any interaction between the founder of the business and other parties involved.	World Bank
Time to launch a business	Time	An indicator that summarizes the time required to complete procedures to start a business. It is expressed in calendar days, as a median value.	World Bank
Number of payments per year	Payments No	Total payments representing taxes and contributions due to the state	World Bank
Time dedicated to payments	Payments Time	Indicator that resumes the time given to make all payments of taxes and contributions imposed by the state	World Bank

Source: Medina and Schneider (2018), World Bank and authors' own processing

Starting from the five explanatory variables presented previously, as well as from the considerations of the scientific literature in the field, we will formulate five hypotheses regarding the impact manifested by these factors on the informal economy. Later we will test these hypotheses, results being presenting within the following section.

H₁: The more expensive it is to launch a business, the more pronounced the intention of individuals to get involved in the informal economy.

H₂: Numerous and complicated procedures contribute in a positive way to the development of the underground economy.

H₃: Time-consuming operations in the process of launching the business push economic agents into the informal sector.

H₄: The numerous fiscal obligations determine the companies to operate in the informal sector to a greater extent.

H₅: The informal economy is expanding with the increase of the time allocated for fulfilling the fiscal obligations.

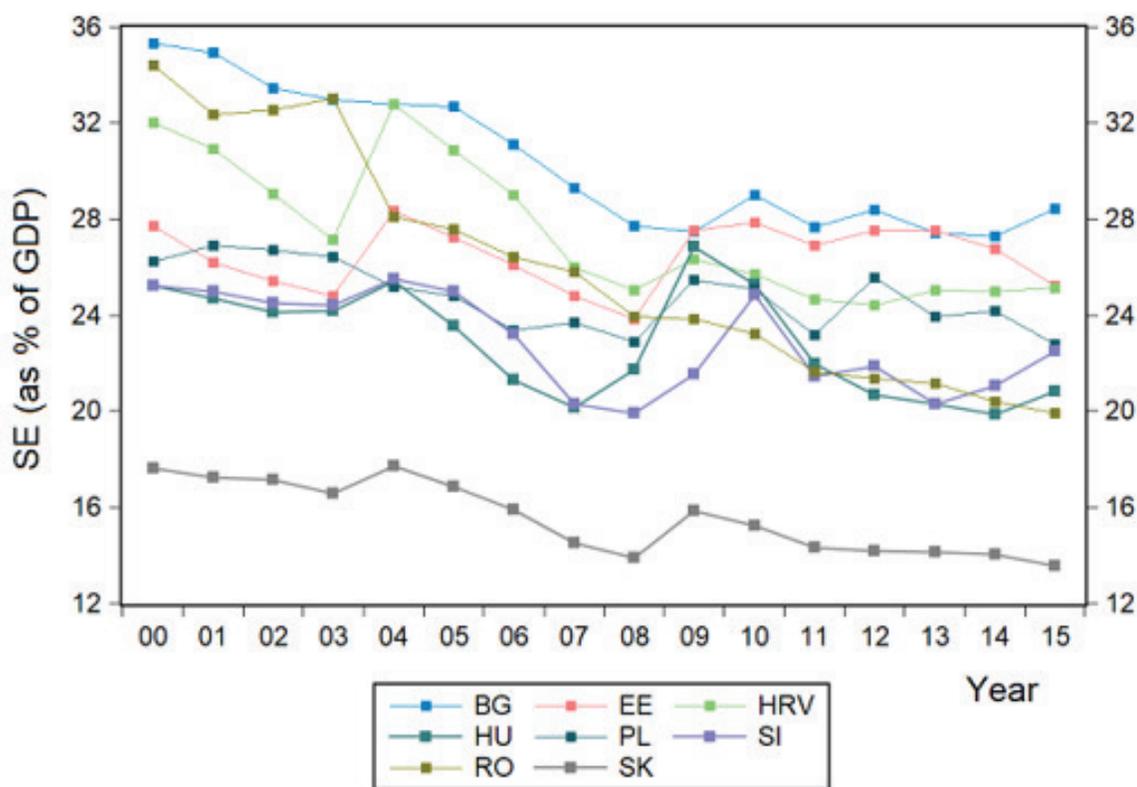
4. Results and discussions

The present section is dedicated to presenting the main results of our analysis.

The graph shown in figure 1 highlights the evolution of the informal economy at the level of the eight states described in the previous section, the estimates being provided by Medina and Schneider (2018). According to this graph one can notice a decrease of the informal sector at the

level of each state, a sign that the policies to combat the informal economy show promising results. A mutual aspect related to the underground economies of the eight states is represented by the expansion registered between 2008 and 2010, proof that during the economic crisis and immediately after the informal sector prospered. The loss of jobs and the slowdown in the activities of the official economy have translated into a considerable increase of the activities included to the unregulated economy.

Figure 1: Shadow economy evolution between 2002 and 2015



Source: Authors' processings using Medina and Schneider (2018) estimates

Before estimating a model by using the panel data presented in the previous section, it is necessary to test the stationarity of the proposed variables. To achieve this, we will use the stationarity test proposed by Im, Pesaran and Shin (2003), results being represented in Table 2.

The null hypothesis associated with this test indicates that the cross-sections have a unit root, the alternative hypothesis being that of the stationary process. According to the p-values exposed in parentheses, we notice that for the level series we fail to reject the null hypothesis and accept the alternative one. Therefore, we will have to differentiate the series and re-apply the test, the results being highlighted on the second column of the table. We notice that as a result of the differentiation, the processes have become stationary.

Table 2: Im, Pesaran & Shin stationarity test

	Level	1st difference
SE	-1.367 (0.093)	-4.460 (0.000)***
Cost	0.648 (0.741)	-3.456 (0.000)***
Procedures	-0.190 (0.424)	-2.817 (0.002)***
Time	-3.190 (0.789)	-3.656 (0.000)***
Payments No	2.162 (0.223)	1.936 (0.001)***
Payments Time	-1.736 (0.391)	-1.611 (0.009)***

Note on Significance codes: 0.01'***'; 0.05'***'; 0.1'***'

Source: Authors' own processing

Considering the results provided by the stationarity test, we will continue with the estimation of the regression model on our panel data, using the first order differentiated series.

The estimation of the model will be based on the OLS technique, but establishing beforehand whether the model will be one without effects, with fixed effects or with random effects. Given that in this situation we are dealing with eight distinct states, we will not rely on the model without individual effects, but we will focus on the selection between the model with fixed effects and the model with random effects. The model with fixed effects has the role of analyzing the individual differences regarding the intercepts, based on the fact that the variance and the slopes are the same for all the cross-sections. In the case of the model with random effects, there is the hypothesis of the variation between the entities as being uncorrelated with the regressors included in the model.

We will further run the test proposed by Hausman (1978) to identify the specification of the regression model. The null hypothesis of this test assumes the lack of correlation between the individual effects and the regressors included in the model, while the alternative hypothesis supports the choice of a model with fixed effects.

Table 3: Hausman specification test

Chi-Sq. Statistic	Prob.
5.881	0.208

Source: Authors' own processing

According to the value of Prob in the previous table, we find that we fail to reject the null hypothesis and assume a random-effects model for our panel data structure.

We further continue our analysis by estimating the regression model starting from the following basic equation.

$$\Delta SE_{i,t} = \alpha + \Delta Cost_{i,t} + \Delta Procedures_{i,t} + \Delta Time_{i,t} + \Delta PaymentsNo_{i,t} + \Delta PaymentsTime_{i,t} + \eta_i + \varepsilon_{i,t}$$

In the previous equation both the dependent variable and the explanatory variables are preceded by the differentiation operator, since we established that the level series were characterized by the presence of the unit root. Each *i* index denotes one of the eight states analyzed, while *t* corresponds to each year between 2000 and 2015.

Table 4: Panel regression estimates

Variables	Model 1	Model 2
<i>C</i>	0.478*** (0.000)	0.494*** (0.002)
<i>ΔCost</i>	0.161** (0.022)	0.134*** (0.008)
<i>ΔProcedures</i>	0.375** (0.031)	0.265*** (0.006)
<i>ΔTime</i>	0.304*** (0.001)	0.378*** (0.000)
<i>ΔPayments No</i>	0.712 (0.223)	-
<i>ΔPayments Time</i>	0.558*** (0.000)	0.265*** (0.006)
R-Squared	0.798	0.813
Adj. R-Squared	0.801	0.825
F-statistic	0.000	0.000

Note on Significance codes: 0.01'***'; 0.05'***'; 0.1'***'

Source: Authors' own processing

The generalized least squares estimation method (EGLS) is used, two regression models being estimated to determine the relationship between business regulations and the level of the informal economy for the eight European countries presented in the previous section. The estimation of the first model took into account all five proposed explanatory variables, but as can be seen in the previous table, one of them does not show statistical significance. The variable in question is Δ Payments No, therefore we decided to eliminate it from our analysis. We thus continued with the estimation of a second model, in which all the other four variables are included, being characterized by statistical significance. As we have assumed, the costs associated with starting a business, along with the time dedicated to complete the procedures needed for establishing a company have a positive impact on the development of the informal economy. In other words,

We can associate these aspects with the existence of complicated and time-consuming procedures that push economic agents to get involved in the informal economy. If we refer to the fiscal obligations, synthesized through the variables Δ Payments No and Δ Payments Time, we notice that their impact is also a positive one on the underground economies. However, the difference signaled between the two models is given by the lack of statistical significance of the variable Δ Payments No which was excluded from the estimation of the second model. Therefore, we can say that it is not the number of taxes that economic agents have to pay, but rather the time it takes to fulfill these obligations that determines them to work in the unregulated economy. The goodness of fit of the two models can be assessed based on the R-Squared indicator. The improvement of the estimation is noticed with the removal of the variable Δ Payments No, the variables included in the model explaining in proportion of 82.5% the evolution of the informal economies at the level of the eight European states.

5. Conclusions

This article aimed to analyze the link between business regulations and the evolution of the underground economy in eight European Union member states over the period 2000-2015. In order to achieve this, we proposed a panel data analysis using as data collection sources the annual Doing Business report provided by the World Bank, as well as the latest available estimates on the level of the informal economy. First of all, the analysis aimed at testing the panel data stationarity. The presence of the unit root imposed a first order differentiation of the data. Given that we analyzed distinct states with distinct particularities, we have initiated a regression model on panel data based on the specification suggested by the Hausman test. Two random regression models were estimated, the second model being considered appropriate to explain the evolution of the informal economy both in terms of the statistical significance of the estimated coefficients and based on the coefficient of determination. The hypotheses initially formulated were confirmed following the estimation of the model, so that the regulations synthesized by the considered indicators determine the expansion of the informal economy. The high costs of setting up a business, along with complicated and time-consuming procedures, cause individuals to operate in the hidden economy, where tax regulations and obligations are virtually non-existent. Also, the

more significant time allocated to fulfilling the fiscal obligations, the less motivated individuals are to continue to carry out their activity within the regulated economy. This conclusion is in line with the empirical evidences in the field, a variety of studies indicating the tax burden as the main cause of growth of the informal economy. According to the above, the authorities must consider a series of measures meant to keep the economic agents in the official economy, to motivate them to fulfill their fiscal obligations and also to take all the steps required by law to set up an enterprise. Better thought out and less complicated regulations, together with the simplification of the procedures regarding the payment of fiscal obligations through reforms that include digitalization can be some suitable policies in the direction of limiting the underground economy.

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